

Description

Mobile telecommunications-based emergency-assistance unit (I):

The invention specified in patent claim 1 is based on the problem that a special, compact, easily portable, mobile telecommunications-based emergency-assistance unit has not been available on the market to date. Although mobile telephones ("mobiles"), which are now used universally, comprise the telecommunications emergency call "110", use of this emergency call by pushing keys "110" is in practice much too complex and laborious, and even impossible, in most emergency situations, where the emergency call needs to be sent in a matter of seconds, securely and also as inconspicuously as possible (e.g. in the event of attacks or the like). In addition, in practice, such stressful situations often cause the victim to have "mental blocks" akin to shock which make it impossible for him to enter a particular, albeit only short, digit combination ("110") on the mobile by heart with the necessary level of mental concentration.

In addition, particularly in the fight against crime (e.g. kidnapping, sex offenses etc.), the current technical form of the emergency-call system normally presents the security authorities with the problem that

the victim's relatives will generally not provide notification of a missing person until a considerable time after the incident, when it may already be too late for the victim. Another problem with the current situation is that the victim can be taken away from the directly surrounding area by the perpetrator in this interim period, which additionally complicates the search for the victim and the perpetrator to a considerable extent, resulting in an additional loss of valuable time for rescue. The search for the perpetrator is additionally made very particularly more difficult when the victim himself remains missing following abduction and cannot be found.

I thus also considered a technical problem to be to design such a mobile emergency-assistance unit which eliminates the above problems, in particular, or at least minimizes them as best possible. A particular problem I had in the above context was that of designing a trigger apparatus for activating the emergency-assistance unit which can be operated extremely simply, with absolutely reflex-like speed and without any particular mental demands on the victim, but nevertheless securely and reliably, and which also provides the security authorities with valuable services for finding the victim as quickly as possible and also for apprehending the perpetrator. The novel

telecommunications-based emergency-assistance unit (I) which I have designed satisfies these requirements.

The description below relates to the comparatively most comprehensive and, in my opinion, also most advantageous solution to the problem, that is to say it relates to the combination of the emergency-assistance unit with a conventional "mobile" with all the optional technical additions listed in the subsequent patent claims for optimizing this novel emergency-assistance system, this combination being illustrated by way of example in the appended sketch; reference is made to the identification of the individual components therein. With regard to the number, type, combination and placement of the individual electronic and mechanical components of this emergency-assistance unit and its trigger apparatus, this is merely a single example from a number of possible solution options based on this innovation which I have developed:

- 1) While the "emergency cap with the transmission device" (1) is fitted on the mobile (2), which has been physically redesigned as appropriate, and is held securely there, e.g. by means of resilient holding pegs (3a and 3b) in holding slots (4a) and (4b) and is secured against unintentional removal, the transmission device (5) in the emergency cap is in a locked state.

2) In the event of an emergency or dangerous situation arising, it is merely necessary to push in the two pushbuttons (optionally clips or the like) (6a) and (6b) fitted on the mobile housing with a single, simple action of the gripping hand. This pressure pushes the two resilient holding pegs (3a) and (3b) out of the holding slots (4a) and (4b). This partially unlocks, but does not yet trigger, the cap attachment (with the emergency-assistance transmission device incorporated therein). The same effect is also produced, by way of example, when a "snap fastener" is used. Final unlocking (still without triggering!) is effected by removing the cap attachment to expose a further contact button (7) situated on the underside of the cap attachment. Pushing this button (7) finally triggers the emergency-assistance transmission device in the cap. In this case, the emergency-assistance transmission device is supplied with power by a battery block (9) in the cap attachment.

Triggering the emergency transmission device thus requires two manual actions: first, unlocking by removing the cap attachment from the handheld unit (in this case the mobile) and then also pushing the contact button (7). This double safeguard is intended to prevent unintentional false alarms; this does not

significantly impair the effectiveness of the emergency-assistance unit.

Firmly pushing in this contact button (7) completes the circuit in the cap attachment. This contact button (7) is designed such that, when it has been pushed in, it remains pushed in even when released, and hence the circuit in the emergency-assistance transmission device remains closed. In addition, to provide the best possible protection for a victim, it must also not be possible for the button to be readily pulled manually from the cap housing again and hence for the circuit in the emergency-assistance unit to be interrupted. To this end, it is appropriate, by way of example, to provide the underside of the button with a round opening (8) having an internal thread into which a corresponding "threaded key" can be screwed; only by removing this screwed-in "threaded key" is the contact button (7) pulled out of the housing again and hence the circuit interrupted. As an alternative, when the button (8) has been pushed in, the emergency-assistance transmission device can be disconnected again when the danger situation has passed by entering the victim's Id. code (again).

The concept also remains the same, however, if - more quickly still - merely removing the cap actually

triggers the emergency transmission device, that is to say if this does not additionally require the contact button (7) to be pushed, which can be dispensed with entirely in this case. The danger that such a simplified design might trigger a few unintentional false alarms appears to be low and acceptable when weighed against the even greater speed of triggering the emergency call which is attained as a result.

The user's (victim's) personal Id. code is programmed, stored and possibly erased using the mobile's numeric keypad. To this end, additional function keys (10) are added if required. The emergency-assistance unit is controlled by means of a corresponding electronic chip (5d) in the cap attachment, which in the locked state (cap fitted) is connected to the programming keypad (10) and to the display (12) on the mobile by means of a plug connection (11).

To optimize it, this novel emergency-assistance system provides, inter alia, for the emergency call automatically to have two identification code numbers and/or a short message ("SMS") appended to it during telecommunication and for these to appear visually on a display at the receiving station (security authority): first, a special Id. code No for the telephone base station (mobile radio transmission mast or the like)

currently receiving and forwarding the emergency call. This code number allows the receiving security authorities immediately to restrict the area where the incident or danger is arising to the telephone base station's transmission range and to take appropriate measures (e.g. ring search with road blocks, for example to prevent the victim from being taken away). Secondly, a second special Id. code number (or short message "SMS") for the victim in order to identify him, including as many telephone numbers as possible for close relatives. This victim Id. code allows the receiving security authorities to contact close relatives of the victim by telephone immediately after the emergency call has arrived and to obtain detailed information about the current possible whereabouts of the victim from these relatives in order to be able to tailor further specific measures taken by the security police thereto.

Both codes need to be transmitted - coupled to the emergency call signal and also to the signal from the DF transmitter (the latter as a double safeguard to optimize the system) by means of telecommunication - directly (that is to say as far as possible without any time-wasting detour via a "call center") and automatically to the security authorities concomitantly by means of telecommunication.

In order to back up this novel system with the two Id. codes, each of said already existing and also future fixed telecommunication installations needs to be equipped and retrofitted with telecommunication equipment accordingly, insofar as these technical options should not already be provided by the current technical standard of these mobile radio base installations or should need to be implemented following setup of the new UMTS network, which I have not been able to discover.

III) Detailed description with reference to specific examples of application:

- 1) (Fictional) child abduction/sex offense; variant 1: false alarm

On her way to school by bicycle, 12-year-old "M." carries such an emergency-assistance mobile with her from village A to village B. After some time, she notices a car driver always driving past her very slowly. One particular day, this car suddenly stops abruptly just in front of the girl. The girl sees no way of escape and, in panicked fear, pulls the cap attachment off the mobile and pushes the trigger button (8). Cyclists on the route then appear by surprise, the man gets quickly back into his car and drives off.



Before she gets back home, the girl meets her parents and also the police who received the emergency call. This is because, immediately after receiving the emergency call, the police had rung the still unaware parents of the girl (and had asked for the girl's exact or possible whereabouts) using the telephone number which had been programmed in, using the mobile's numeric keypad, as a special Id. code for the girl in the event of the triggered emergency call "110" and in the event of the DF transmitter signal and which had thus been received by the police via the nearest mobile radio mast to village A. Irrespective of whether said Id. code (in the form of a telephone number) was able to be used to reach a close relative of the girl and to obtain information about the girl's current whereabouts from that relative, the police themselves already had knowledge of the restrictable local area in which the emergency call had been sent because the emergency call "110" automatically transmitted not only the girl's Id. code but also the further special Id. code of that transmission device (in this case the mobile radio transmission mast for village A) which had immediately received and forwarded the emergency call first. The novel emergency-assistance system thus even presents a double safeguard for the fastest possible localization of the scene of the incident or danger to give the best possible protection to the victim!

Following the happy outcome of this situation variant with a supposed false alarm, the emergency call triggered by the girl is now ended by fitting the emergency cap onto the mobile and entering the girl's Id. code. In addition, the DF transmitter, triggered together with the emergency call, and the microphone transmitter in the cap attachment are turned off separately by a technician. To provide the best possible protection for victims, this should be done or should be necessary separately from the emergency call "110".

2) (Fictional) child abduction/sex offense; variant 2: offense

Situation as in variant 1, but the girl does not receive help from third parties:

The girl pulls the emergency cap off the mobile and hides it from the perpetrator in her tightly closed fist. For this to be possible, it is absolutely essential that the cap attachment be designed to be as small and inconspicuous as possible! The perpetrator then snatches the mobile from the girl to prevent her from making a (conventional) emergency call and throws it away. So that the perpetrator does not recognize it

to be a special emergency-assistance mobile, the mobile needs to look like an entirely "normal" mobile even when the emergency cap has been removed! The perpetrator grabs the girl, locks her in the trunk of his vehicle and drives off in the car; he leaves the girl's bicycle at the side of the road.

The emergency-assistance unit then triggers the functions already described for variant 1. Despite her panicked fear, the girl in the trunk is able to talk into the activated microphone transmitter ("bug") in the cap attachment in order to give her name, the scene of the incident, possibly also a rough description of the perpetrator and the color of the vehicle involved in the incident. This information is forwarded, having been coupled by radio to the emergency call "110", to the police, who can launch the rescue operation immediately using this information. At the scene of the incident, the police find only the girl's bicycle and her "mobile's body section", however. In the meantime, the perpetrator with the victim in the trunk of his vehicle involved in the incident has left the range of the mobile radio mast in village A and has entered the range of the mobile radio mast in village B, which is now receiving the emergency call "110" and the signal from the DF transmitter and forwards it - together with the special Id. code number of the mobile transmission

mast (= now the one in village B!) and the (unaltered) Id. code number of the girl - to the police. In this way, the police can establish the direction of travel and the approximate location of the perpetrator and of his victim, still without being able to make direct contact with the DF transmitter, and they can take appropriate search action, e.g. a ring search. In addition, the security authority recognizes from the girl's Id. code, which has remained unchanged, that this is actually the same emergency, that is to say not another emergency involving other people. In the range of the mobile radio transmission mast in village X, the perpetrator finally stops on a remote forest path in order to commit an indecent assault on his victim; the girl continues to hold the cap attachment in her closed fist so that the perpetrator cannot see it. Up to this time, however, this emergency-assistance system has meant that the police have got so close to the perpetrator, unnoticed by him, that exact localization of the victim and the perpetrator is now actually possible directly using the active DF transmitter, and the perpetrator can still be reached in good time. Using the active microphone transmitter, the events at the scene of the incident can be tracked and hence valuable insight (e.g. the voice of the perpetrator) can be obtained for later apprehension of the perpetrator (in case he flees when the police arrive).

Even if the trunk of the perpetrator's vehicle should be shielded such that the emergency call and the signal from the DF transmitter with a covert monitoring function do not work from there, this novel emergency-assistance unit nevertheless affords adequate and the best possible protection, because such offenses virtually never take place in a closed trunk, but rather the victim is taken out of the closed trunk again at some point or another and the emergency-assistance transmission device is then fully operational again no later than at this point. In addition, after abduction of the victim, sex offenses or kidnapping, in particular, are generally carried out at the last location visited over a relatively long period of time, which means that the emergency-assistance transmission device is still useful and offers effective protection should its operation actually have been intermittently disrupted by virtue of the victim spending a relatively long time in a "zone with no radio coverage". In addition, one optional path to a solution could be to design the cap attachment and the emergency-assistance transmission device therein such that it can use the perpetrator's entire vehicle as an antenna, for example if the cap attachment is pressed against the metal lid of the trunk by the victim inside the closed trunk. To this

end, the emergency cap attachment could be shrouded by an appropriate contact layer, for example, which can provide a conductive connection between the emergency transmission device and the body of the perpetrator's vehicle.

3) In the case of people being kidnapped or else in the case of accomplished sex offenses (e.g. sex-related murder), the emergency-assistance unit can likewise considerably simplify at least finding the victims, which is in turn a fundamental prerequisite for apprehending the perpetrator and hence also for preventing further such offenses by the same perpetrator.

4) Other areas of use for the emergency-assistance unit: e.g. bathing accident, accident or sudden heart attack while hill walking, mushrooming, avalanche accident when skiing etc. Equally, the emergency-assistance unit is suitable not only for its main purpose of fighting crime but also for saving lives in all other dangerous emergency situations which arise so suddenly that there is no time left for a "normal" emergency call "110". Since such emergency situations are often triggered by extreme events (a fall in the mountains, capsizing when surfing etc.), it is essential to ensure that the cap attachment has the

most robust design possible; in particular, the cap attachment should be shockproof and watertight and should float in water.

5) In the military sector too, appropriate life-saving use of this emergency-assistance unit is conceivable, e.g. when searching for missing soldiers.

#### IV) Description of value, benefit and need

I am convinced that this emergency-assistance unit which I have designed and which represents an entire novel telecommunications-based emergency-assistance system, particularly when physically connected to a conventional mobile, is of very great value and benefit to everyone; it can save lives and additionally can also make a very great contribution to the fight against crime, namely for ascertaining perpetrators. Anybody - throughout the world! - can inadvertently get into such an emergency situation, which means that there is also a need for this cleverly devised novel lifesaving system worldwide. Particularly for women and girls, who are particularly at risk as potential victims of violent/sex offenses, this emergency-assistance unit at least represents the best possible additional protection, although it is no absolute guarantee of protection and survival, of course. The

production and marketing of this novel emergency-assistance unit are thus, in any case, of prime importance to the general public and to every individual for saving lives and for preventing crime. With regard to the now rapidly rising number of cases of, in particular, kidnapping and subsequent sexual murder of young girls and women, production of this novel emergency-assistance system based on this telecommunications-based emergency-assistance unit which I have designed would already seem to be an indispensable need throughout society worldwide (!).

Assuming that producing this novel emergency-assistance concept should require support from the radio network operators (technical adjustment of the base transmission installations for installing the Id. codes described above !), this ought not to fail, because production is also in their own interest: if the network operators permit technical implementation, and possibly even financially subsidize the end consumer's purchase price for these emergency-assistance units, so that they are even financially affordable for less wealthy citizens, they will have much less difficulty finding locations for further fixed base telephone installations (radio masts etc.) in future: if citizens know that this novel emergency-assistance system can also protect them and their relatives effectively and



as best possible, then they will undoubtedly not be against implementation thereof (this also includes wide-area installation of fixed radio transmission installations!) - in the same way as the greatest opponent to air traffic noise does not complain about the noise from a rescue helicopter!.

Another significant advantage of this innovation is that, in my opinion, it can be used for significantly improving and reducing the cost of the previously required, very complex and in particular also very expensive satellite position-finding system, and this may even become dispensable to some extent. To date, the position of a point sought on the earth has been found using said satellite technology with the direct "single-beam system", where the bearing of the point being sought is taken directly from the orbit. The concept which I have developed can be used for this position-finding for a point being sought (including one which is moving) using a "two-beam system" without the use of satellites, solely with terrestrial fixed radio transmission installations (base stations), provided that, after the imminent implementation of the UMTS network, the base stations are close enough to one another for every point being sought to be in the range of at least two (adjacent) base stations. I will explain this with reference to the exemplary case above

- variant 2 - as follows: base station "A" is the first to receive the emergency call signal and the signal from the DF transmitter. Using a simple field strength measurement for the signal, the direction of the point being sought can be localized precisely in the form of a "directional beam" using the angle dimension and can be precisely defined on the basis of the points of the compass. This "beam" (= a directional straight line from "A" to the point being sought and beyond) can - as can undoubtedly be done technically - be transferred or projected onto an electronic map. The adjacent base station "B", likewise receiving the emergency signal, proceeds in the same manner. The current position of the point being sought is the point on the electronic map (in which it is naturally also necessary for the locations of all the base stations to be exactly defined and "classified"!) at which the two directional straight lines from the two base stations intercept. With a continuously moving sought point (e.g. a car with an abducted child in the trunk) and continuously new directional measurements from the base stations "A" and "B" (and "C", "D" ... etc., as soon as the fleeing vehicle enters their range), the receiving security authority can read from the electronic map the exact road and even the precise point on the road at which the vehicle is currently situated at the moment. This novel localization system, which is independent of

(normally foreign) satellites, ought to have great advantage particularly in the area of physically limited regional emergency rescue, but also in the military sector or for covert observation by the security authorities, for example; in any case, a single satellite is also more susceptible to fault (and the consequences of a fault or disconnection are accordingly all the more serious!) than the overall terrestrial radio transmission network of a country with quite a few base stations. It would be all the more desirable for all the network operators to join forces as one unit for this one lifesaving issue, which would strengthen the available radio rescue network even more.

When designing this emergency-assistance unit for crime prevention (but with the same importance for continued apprehension of perpetrators as a result of the fastest possible intervention by the security authorities, which in turn also acts as the most effective prevention of further offenses by the same perpetrator!), I have been able to draw from my many years of professional service as a national police and justice officer in the higher civil service.

In parallel with this design described in the present case, I have also designed the same emergency-

assistance system in a "concealed housing" (e.g. wristwatch housing with a corresponding manner of wearing it on the wrist), that is to say without any coupling to a mobile or the like.

V) Explanation of references for the sketch which follows:

The sketch which follows shows the emergency-assistance transmission device by way of example and in stylized form physically combined with a conventional radio telephone (mobile), from the front, in section:

- (1) = Cap attachment on the mobile
- (2) = Mobile (or the like) - stylized -
- (3a/b) = Holding peg
- (4a/b) = Holding slot
- (5) = Emergency-assistance transmission device
- (5a) = Automatic emergency call "110"
- (5b) = DF transmitter
- (5c) = Microphone transmitter ("bug")
- (5d) = Electronic control unit for the emergency-assistance unit
- (5e) = Transmission antenna for (5a-c)
- (6a/b) = Unlocking clip (or the like)
- (7) = Trigger button for the emergency-assistance transmission device

- (8) = Internal thread for threaded key
- (9) = Batteries/storage batteries for the emergency-assistance unit
- (10) = Function/programming keys for the Id. code
- (11) = Plug connection between (10 and (5)
- (12) = Display also for code on the basis of (10), (5)

Patent claims:

1. A mobile telecommunications-based emergency-assistance unit (I),  
characterized  
in that  
a novel additional special emergency-assistance transmission device with a special construction and trigger apparatus in the form of a removable cap attachment (see reference <1> in the sketch) is physically combined with a conventional mobile telephone device - namely: mobile telephone ("mobile") or handheld radio or other unit comparable therewith, and this produces a novel mobile telecommunications-based combination emergency-assistance unit.

2. The special emergency-assistance transmission device as claimed in patent claim 1,  
characterized  
in that it comprises the following electronic components:

a) automatic (!) emergency call "110" (5a in the sketch) with extension functions (see patent claim 4 and description)

b) specially equipped DF transmitter (5b in the sketch) with extension functions (see patent claim 5 and description)

c) microphone transmitter (<5c> in the sketch),  
(see description)

d) transmission antenna (5e in the sketch).

3. The special construction and trigger apparatus as claimed in patent claim 1,

characterized

in that it

a) is in the form of a cap-like plug-on attachment which is fitted at any, ergonomically advantageous point on the "handheld unit" (mobile or the like as claimed in patent claim 1) and is physically prevented from being unintentionally removed and triggering the emergency call and DF transmitter by mechanical means (e.g. by means of clips, pushbuttons, "snap fasteners" or the like <see 3a/b and 4a/b in the sketch, for example>) or by means of electronic circuits or other locking mechanisms (illustrated visually by way of example in the appended sketch);

b) is ergonomically designed such that it can be

removed very quickly and easily with a single simple hand action on the handheld unit in an emergency or danger situation,

c) disconnects the automatic emergency call "110" again when the cap attachment is fitted onto the handheld unit (e.g. mobile) again and a preprogrammed identification code number associated with the victim is selected (in this regard see patent claim No 4b for specific details!) on the handheld unit's keypad, while the DF transmitter remains connected to the microphone transmitter until it is disconnected separately by a technician when the cap attachment has been opened using a special tool.

4. The automatic (!) emergency call "110" with extension functions as claimed in patent claim 2.a),

characterized

in that

the emergency call "110" transmitted as a result of the emergency-assistance transmission device being triggered has special supplementary signals (= identification code numbers; subsequently shortened to "Id. code") in the form of digit and/or letter sequences added to it automatically



during telecommunication (in this regard see the description of the innovation for specific details!).

5. The specially equipped DF transmitter with extension functions as claimed in patent claim 2.b, characterized in that
  - a) its radio signal automatically has the additional Id. codes cited in patent claim 4 coupled to it, at least the Id. code of the victim (in this regard see the description for specific details).

Mobile telecommunications-based emergency-assistance unit (I)

A mobile telecommunications-based emergency-assistance unit, characterized in that a novel additional special emergency-assistance transmission device with a special construction and trigger apparatus in the form of a removable cap attachment (see reference <1> in the sketch) is physically combined with a conventional mobile telephone device - namely: mobile telephone ("mobile") or handheld radio or other unit comparable therewith, and this produces a novel mobile telecommunications-based combination emergency-assistance unit.